SPECIAL OPERATIONS FORCES ACQUISITION, TECHNOLOGY, AND LOGISTICS
PROGRAM EXECUTIVE OFFICE FOR SPECIAL RECONNAISSANCE, SURVEILLANCE AND EXPLOITATION (SOF AT&L-SR)
APPENDIX G-1
TO
BROAD AGENCY ANNOUNCEMENT
USSOCOM-BAAST-2015
****Change 1****

1.0 Introduction: USSOCOM's Program Executive Office for Special Reconnaissance, Surveillance and Exploitation (PEO-SRSE) (SOF AT&L-SR) mission is to discover, evaluate and transition technologies to provide an asymmetric advantage for Special Operations Forces (SOF). SOF AT&L-SR has identified several specific technology Areas of Interest to accelerate the delivery of innovative capabilities to the SOF warfighter.

2.0. General Information:

2.1. Agency: USSOCOM.

2.2. **Program Office**: PEO-SRSE (SOF AT&L-SR).

2.3. **Addendum Title:** SOF AT&L-SR Appendix G-1 to USSOCOM-BAAST-2015
**NOTE* This Appendix G-1 supersedes Appendix G, which closed December 31, 2015.*

2.4. BAA Number: USSOCOM-BAAST-2015

2.5. Closing Date: This BAA appendix will remain open until December 31, 2016, unless superseded, amended, or cancelled. White papers may be submitted any time during this period subject to the submission process described in this BAA Appendix.

2.6. Contracting Point of Contact (POC) and Technical POC:

Contracting POC:
Primary: Donna W. Guarrera, Phone 813-826-7069, Email donna.guarrera@socom.mil

Technical POC:
Mr. Robert McCaskey, Phone 813-826-5339, Email robert.mccaskey@socom.mil

2.7. Technology Areas of Interest:
USSOCOM is interested in receiving white papers from all responsible sources from industry, academia, individuals, and Government laboratories capable of providing the design, construction, and testing of SOF related technologies. The intent is to accelerate the delivery of innovative capabilities to the SOF warfighter. It is an interactive process designed to assess the viability of technologies while simultaneously refining user requirements.

Specific technologies for this Appendix G-1 include:

2.7.1 TAGS

This product line covers Tagging, Tracking and Locating (TTL) technologies that can be used on persons and objects. Technologies of interest would provide reductions in size, weight and power/price (SWaP2), improved accuracy or new capabilities to the following:

- GPS Tags for both normal and disadvantaged environments (urban, maritime, jungle, subterranean).
- Non-GPS Trackers (urban, maritime, jungle, subterranean)
- Covert audio and video devices that provide store and forward capabilities via LOS and BLOS.
- Enhancements in the ability to power devices either through better power sources or improved device efficiencies.
- New techniques for hardware modification and fabrication to include means to miniaturize tags and audio devices through microelectronic fabricating techniques.
- Field Programmable Gate Arrays (FPGA), die harvesting, and other hardware component developments for micro processing and associated firmware, in order to reduce the overall size and weight of the sub-system.

2.7.2 BIOMETRICS

This product line covers technologies used to collect, analyze and distribute various physical parameters that can be used to identify personnel. There is particular interest in technologies with a small form factor that provide the capability to rapidly (< 2 min) identify personnel, reduce false alarm rates and/or offer novel approaches at short to long distances in all environmental conditions. Technologies of interest are:

- Facial and/or iris capture for matching against authoritative databases
- Rapid, portable DNA collection and processing

2.7.3 FORENSICS

This product line covers collection and processing of both physical and electronic information obtained from target locations either forward or at an Exploitation Analysis Center (deployable laboratory like shelter). In the short term there is a need to process media devices on or near target locations and obtain as much information as possible in 30 minutes or less. There is also a focus on updating EAC (Lab Like) equipment that can provide greater fidelity of chemicals of interest forward. Computer forensic\exploitation conducted the EAC is has a focus on faster imaging and easier exploitation by non-computer forensic experts.

Media exploitation capability priorities for 30 minutes or less are:

- Produce a forensically sound image of the target device,

- Extract file and user-created metadata such as filenames, hash numbers, date-time stamps, etc. and compare to an onboard watchlist,
- Locate and extract personal identifying information (PII) such as names, addresses, telephone numbers, e-mail addresses, chat user names, social media user names, etc. and compare to an onboard watchlist,
- Examine, extract internal file content for key words and phrases in pre-defined items of interest and compare to an on-board or data-linked watchlist,
- Extract files, including documents, images, e-mail, calendar entries, messaging tools, and social media files identified as pertinent to a specified examination,
- Examine user-configuration settings,
- Extract memory device characteristics such as directory structure, file sizes and locations,
- Identify software used to embed and recover messages in finished products, draft files, or other human or machine-interpretable files,
- Identify software used to conceal or delete activity,
- Identify unknown file types and correlate to supporting applications,
- Display in detail what has been collected from a device,
- Create an operator-configurable output that is interoperable with standard MS Office applications (i.e., Word, Excel, .txt, .rtr, .csv),
- Device should save all captured data in the event of interruption (rapid disconnect),
- Device should survey digital media and acquire properties associated with memory drives and devices.

Media exploitation capability priorities at the EAC level are:
- Simultaneous imaging of media
- Simpler user interface for exploiting media (searching and reporting)
- Innovative transmission or transfer of large images over the internet

For EAC (lab like equipment):
- Chemical analysis capabilities that are deployable to austere conditions
- Operated in a shelter and semi temperature controlled environment
- Provide fidelity for organic and inorganic materials.

2.7.4 SIGINT

These technologies concentrate on RF communications intercept and location. Technologies of interest should provide improved performance, flexibility, SWaP2, and lower cost of ownership. Platforms and operational environments can be on land, air, sea, manned or unmanned, and manpack based. Technologies of interest are:

- Software defined radios
    - Readily reprogrammable and reconfigurable (to include remotely) RF sensing

receivers
    - Data infiltration and exfiltration for payload information transport
    - Security features for unattended operation
- Analog and digital receivers
    - Improved sensitivity and efficiency
    - Data infiltration and exfiltration for payload information transport
    - Security features for unattended operation
- Advanced antennas for RX and TX
    - Both passive and active
    - Arrays and conformal
    - For use on various platforms, man packable and mobile
    - Reduced size
    - Simplified integration
    - Multiband and concealed applications
    - Meta-material solutions
    - Camouflaged
- Algorithms for detecting, classifying and exploiting signals in near real time
- Improved SIGINT two-way fusion with other intelligence disciplines
- RF Geo-location and Direction finding signal processing algorithms and hardware, including fused Time /Frequency Difference of Arrival and Angle of Arrival processing
- Low-Power low noise amplifiers (LNAs) with ultra-high linearity and higher dynamic range front ends for use in command, control, and communications systems without compromising system sensitivity (noise figure)
- Network capabilities in compliance with the Airborne Overhead Integration Office [Note: now Airborne Multi-Int Office – AMO] Communications Intelligence Joint Interface Control Document 4.1, 4.2, and follow-on's
- Improved Graphic User Interfaces
- Improved training systems
- Enhancements in the ability to power sensors and communications either through better power sources or improved hardware/software efficiencies
- Technologies to use SIGINT systems to support TTL, Special Communications and Unattended Sensor operations
- High resolution wideband radio frequency spectrum collection and monitoring

2.7.5 GEOINT and IMINT ADVANCED GEOSPATIAL & IMAGERY EXPLOITATION

Technologies concentrate on game-changing interoperability of data used for battlespace awareness across SOF C2, planning, rehearsal, analysis and operations. Technologies of interest should provide new capabilities for processing, exploitation and dissemination of imagery and spatial data. Operational use cases are primarily precision low-flying at night and ground operations in disconnected, intermittent and/or limited bandwidth environments. Technologies of interest:

- Collection and aggregation of mobile aerial mapping data to create urban and wide-area high resolution 3D with survey level accuracy to the sub-centimeter. Data must interoperate with other CAD and GIS data in open industry formats.

- Secure, encrypted aerial data management and imagery processing for distributed survey operations. Technologies should automate data upload, production and export of georeferenced maps, elevation models, and point clouds in industry standard, high resolution formats as well as smaller, user friendly formats like GeoPackage for integration with existing GIS workflows.

- Prototypes that fuse geospecific modeling and simulation data with C2, ISR, and publicly available information to create near real-time mixed reality environments. Capabilities should be able to integrate sub-centimeter 3D interior and exterior data in open industry standard formats.

- Rapid collection and visualization of Building Information Modeling (BIM) data including lighting analysis, building properties (materials), and primary spatial dimensions accurate to the sub-centimeter in open industry standard formats.

- Conversion of point cloud data to polygonal structured data in open geospatial formats. Integration of multiple point clouds into single 3D models and scene visualizations.

- Rapid collection and visualization of topographic-bathymetric data including primary spatial dimensions with 15-30cm accuracy in open industry standard formats to integrate with other data using commercial and open source tools.

2.7.6 TACTICAL EXPLOITATION OF NATIONAL CAPABILITIES (TENCAP)

This area concentrates on technologies, processing and capabilities to extend National Technical Means investments and capabilities to the lowest tactical echelon user possible. Technologies of interest should provide improved performance, SWaP2, and improved intelligence and situational awareness support access to communications constrained users in the following areas:

- Data infiltration and exfiltration
- Geo-spatial intelligence (GEOINT)
    - Interpretation and analysis tools that expedite processing, improve performance and flexibility
    - Improved GEOINT processing
        - Multi/Hyperspectral
        - Infrared
        - Panchromatic
        - Synthetic Aperture Radar

        - Lidar
        - Digital Elevation Models
        - Point Cloud processing
    - Integrated products from various platforms, to include land, air, space, sea, manned or unmanned, and manpack based
    - Automatic National Geospatial Agency certifiied target location processing
    - Fused Intelligence discipline processing and production
    - Production processing to reduce Geoint Analyst man hours
- SIGINT involving National Technical Means and/or AOCO COMINT JICD 4.x compliant systems
- Measurements and signature intelligence (MASINT)
- Human intelligence support tools
- Targeting
- Friendly force tracking
- Command and control
- Combat identification
- Moving target indications and mobility platform tracking

2.7.7 OBFUSCATED DATA TRANSPORT SYSTEMS/ARCHITECTURES

This area covers secure communications transport networks used to route information, worldwide, to desired locations in a manner that takes full advantage of the trends in commercially available networks to obscure the originating source and final destination from third-party discovery. Technologies of interest would provide networks constructed potentially using a combination of co-location sites, public telecommunications service providers, and public cloud service providers and incorporate threat counter-measures.

2.7.8 LOW-VIS COMMUNICATIONS

This product line covers hardware and software solutions to provide low visibility team communication and situational awareness capabilities. Technologies of interest would provide:

- The ability to have two-way obfuscated communications between SOF personnel and allied personnel
- Allow more diverse infrastructure employments beyond those just found in US/Western industrialized countries including low-bandwidth and high-latency disadvantaged communications channels
- Disassociation of user signatures
- End-to-End encryption

2.7.9 TECHNICAL SUPPORT SYSTEMS (TSS)

This area concentrates on items critical to mission success but is often not part of the initial design. Technologies of interest should provide improved performance, SWaP2 and ease of use. Technologies of interest are:

- Power sources
    - Primary batteries
    - Rechargeable batteries
    - Solar
    - Fuel Cell
    - Energy Harvesting
    - Hybrid systems
- Communications
    - Energy efficient protocols
    - MANET
    - High bandwidth
    - Anti-jam
    - LPI/LPD/LPE
    - Over-the-horizon
    - Secure
    - Small form factor
- Advanced antenna designs
    - Conformal
    - Physically small
    - Tunable
    - Multi-band
    - Broadband
    - High gain
    - Steerable
    - Efficient
- High efficiency electronics
    - Amplifiers/transmitters
    - Controllers
    - Imagers
    - Displays

3.0 Submission Instructions for - Appendix G-1 to Broad Agency Announcement USSOCOM-BAAST-2015.

3.1 Technology Development Cost and Schedule: Offerors are advised to consider a limit of not more than $1 million total cost of development and not more than 18 months to complete all efforts for each submission under Appendix G-1 Offerors may exceed this amount, but they may or may not be considered for award due to cost and schedule constraints and/or other statutory or regulatory requirements.

3.2 Quad Chart and White Paper Submission and Review Periods: The Appendix G-1 will open on **March 1, 2016** and close on **December 31, 2016 at 11:59 p.m. EST**. USSOCOM SOF AT&L-SR intends to conduct scientific and peer reviews during the submission period and up to 30 days after closing this appendix. USSOCOM will notify Offerors whether or not their quad chart/white paper was selected for submission of a proposal. This process usually takes 6-8 weeks after submission.

3.2.1 Instructions for the Preparation and Submission of Quad Chart and White Paper

3.2.1.1 A Quad Chart and White Paper is intended to gain a preliminary assessment of the Government's interest prior to incurring the additional expense associated with a full proposal submission. Those Quad Chart/White Papers found to be consistent with the intent of this BAA may be invited to submit a full technical and cost proposal. This however does not obligate the Government to award a contract. Based on the initial assessment, Offerors may be instructed to prepare a full proposal or may be informed that the prospective science or technology is not in alignment with current program interests. This is intended to reduce unnecessary handling of proposals and proposal preparation costs. All responsible organizations may submit a quad chart and white paper which shall be considered.

3.2.1.2 Proposals. Additional information regarding proposal submission requirements will be provided after the decision is made to pursue the QC/WP. The following general guidance is provided for reference: Proposals submitted under this BAA are expected to be unclassified; all proposal submissions will be protected from unauthorized disclosure in accordance with applicable federal law and DOD/USSOCOM regulations; Offerors shall appropriately mark each page of their submission that contains proprietary information or other restrictions. However, the Government prefers that information received be non-proprietary. If Offerors need to submit any classified information they should contact the Contracting Officer listed in Section 2.6.

Note – Offerors are notified that only full proposals will be subjected to a complete proposal technical evaluation based on the criteria stated herein.

3.2.1.3 Submission Content and Formats – See below. Note that requests for alternative proposal formats may be appropriate and should be coordinated with the SOF AT&L-KI Contracting Officer.

Quad Chart (PDF Format)

- Number of pages – 1
- Font – Times New Roman, 12 Point

- Page orientation – landscape
- Paper size – 8.5 x 11 inch
- Upper left quad – Pictorial data or representation
- Upper right quad – Description of effort and perceived benefits
- Lower left quad – Summary cost data; labor, materials, subcontracting, travel, profit
- Lower right quad – Project schedule, milestones and deliverables
- Submission – QC and WP shall be submitted at the same time (same upload submission); otherwise the Government will not review. Electronic submission via web page https://www.socom.mil/sordac/Pages/SRSEBAASubmission.aspx

White Papers (PDF Format)

- Number of pages – 5 pages excluding cover page. Pages shall be numbered.
- Cover Page – Labeled "WHITE PAPER" and shall include 1) BAA number and Appendix, 2) proposal title, 3) company information to include address, phone, fax, Cage Code, DUNS Number, and technical & contracts contact information with email address.
- Technical Concept/Narrative – a description of the effort and applicability to the identified program area mission and the objectives/benefits to be derived as a result of the effort. This shall include;
    1. Brief (4 – 5 sentence) executive overview of delivered capability,
    2. Technical approach (why this approach is superior to alternatives and/or current practice),
    3. Effort's perceived benefit (How will this effort enhance or replace the state-of-the-art?),
    4. Technical risk areas (to include mitigation plan),
    5. Performance period,
    6. Pricing ROM,
    7. Expected deliverables and
    8. Any other technical data/information to be conveyed for consideration to include the final deliverable(s) or end item(s).
- Paper Size- 8.5 x 11 inch paper
- Margins – 1"
- Spacing – Single or double
- Font – Times New Roman, 12 Point
- Microsoft Windows or .PDF format
- Submission – QC and WP shall be submitted at the same time (same upload submission); otherwise the Government will not review. Electronic submission via web page https://www.socom.mil/sordac/Pages/SRSEBAASubmission.aspx

NOTE: Do not combine the quad chart and white paper into a single file. Submit each as a separate file. DO NOT password protect the files.

3.2.2 Proposals. Additional information regarding Proposal requirements will be provided if the Government decides to pursue the QC/WP submission.

3.3 Criteria, Relative Importance, and Method for Selecting Proposals for Award:

The Government will review each quad chart/white paper and select the Offerors that have the greatest potential to meet the needs of USSOCOM technology requirements based on the areas stated in USSOCOM-BAAST-2015 Appendix G-1. Initially, a determination will be made if each Offeror is technically qualified and has a comprehensive understanding to undertake the development of the technology based on the information stated in the quad chart/white paper. The Government will determine the most technically competent and capable of the qualified Offerors using the criteria below.

- Criteria (Factors) for Selecting Quad Chart/White Paper for Full Proposal Submission:
    - Importance to agency programs,
    - Technical merit/applicability, and
    - Funds availability.
- Relative Importance: All Factors are of equal importance.
- Method of Evaluation: Peer or scientific review.